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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/666,527

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Todd C. Bailey

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EXAMINER

LUK, EMMANUEL S

ART UNIT

PAPER NUMBER

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/666,527	<b>Applicant(s)</b> BAILEY ET AL.	
	<b>Examiner</b> Emmanuel S. Luk	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Lof et al (2003/0224262).

Lof teaches an alignment mark in imprint lithography (see paragraph [0004]) that can be placed on a side of substrate, but also includes the alignment mark having subsequent material deposited on top such that it is embedded and no longer exposed at the surface (see paragraph 33 on page 4). Lof teaches the concept that the alignment mark can be embedded (see calibration substrate HW) and still be used for calibrating the machine. The alignment mark is no longer necessarily exposed at the surface (Col. 6, lines 40-41).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-7, 12-15, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lof (2003/0224262) in view of Mancini (6,387,787)

Lof teaches an alignment mark in imprint lithography (see paragraph [0004]) that can be placed on a side of substrate, but also includes the alignment mark having subsequent material deposited on top such that it is embedded and no longer exposed at the surface (see paragraph 33 on page 4). Lof teaches the concept that the alignment mark can be embedded (see calibration substrate HW) and still be used for calibrating the machine. The alignment mark is no longer necessarily exposed at the surface (Col. 6, lines 40-41).

Lof fails to teach alignment marks of another material.

Further, Mancini teaches a lithographic template having a bulk material of the template (12), alignment marks (22) that are of another material having a different index of refraction including a metal (gold), space between the alignment marks (25) allowing for radiation to pass through, and the use of a mask in creating the template (Col. 5, line 45).

It would have been obvious for one of ordinary skill in the art to modify Lof with the materials used as an alignment marks as taught by Mancini to aid in alignment.

In regards to claims 19 and 20, these are

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lof as applied to claim 1 above, and further in view of Calveley.

Lof teaches an alignment mark in imprint lithography (see paragraph [0004]) that can be placed on a side of substrate, but also includes the alignment mark having subsequent material deposited on top such that it is embedded and no longer exposed at the surface (see paragraph 33 on page 4). Lof teaches the concept that the alignment mark can be embedded (see calibration substrate HW) and still be used for calibrating the machine. The alignment mark is no longer necessarily exposed at the surface (Col. 6, lines 40-41).

Lof fails to teach the release material layer.

Calveley teaches the use of a release material layer with the stamp during the process (Col. 7, line 53). Thereby, one can modify Mancini with the addition of a release layer to allow for easier removal of the material from the stamp.

It would have been obvious for one of ordinary skill in the art to modify Lof with the addition of a release layer as taught by Calvely because it allows for easier removal of the product from the mold surface.

6. Claim 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lof (2003/0224262) in view of Mancini as applied to claims 1-7 and 12-15 above, and further in view of Calveley (6165911).

Lof in view of Mancini fails to teach the release material layer.

Calveley teaches the use of a release material layer with the stamp during the process (Col. 7, line 53). Thereby, one can modify Lof and Mancini with the addition of a release layer to allow for easier removal of the material from the stamp.

It would have been obvious for one of ordinary skill in the art to modify Lof in view of Mancini with the addition of a release layer as taught by Calveley because it allows for easier removal of the product from the mold surface.

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lof in view of Caveley as applied to claim 8 above, and further in view of Jeans (2004/0219246).

Lof in view of Caveley fail to teach fluorocarbons.

Jeans teaches the use of fluorocarbons as a release layer. "Suitable materials for the release layer 13 include but are not limited to a fluorocarbon material. As an example, the fluorocarbon material for the release layer 13 can be deposited using a plasma deposition of a trifluoromethane (CHF<sub>3</sub>) gas for about 5.0 minutes." [0086]

It would have been obvious for one of ordinary skill in the art to modify Lof in view of Cavely with the use of fluorocarbons as a release layer as taught by Jeans because it is an equivalent substitution for use as a release layer within the molding arts.

8. Claims 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lof in view of Mancini and Caveley as applied to claim 8 and 16 above, and further in view of Jeans (2004/0219246).

Lof in view of Mancini and Caveley fail to teach fluorocarbons.

Jeans teaches the use of fluorocarbons as a release layer. "Suitable materials for the release layer 13 include but are not limited to a fluorocarbon material. As an example, the fluorocarbon material for the release layer 13 can be deposited using a plasma deposition of a trifluoromethane ( $\text{CHF}_3$ ) gas for about 5.0 minutes." [0086]

It would have been obvious for one of ordinary skill in the art to modify Lof in view of Mancini and Caveley with the use of fluorocarbons as a release layer as taught by Jeans because it is an equivalent substitution for use as a release layer within the molding arts.

9. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lof in view of Kobayashi (6509271).

Lof teaches an alignment mark in imprint lithography (see paragraph [0004]) that can be placed on a side of substrate, but also includes the alignment mark having subsequent material deposited on top such that it is embedded and no longer exposed at the surface (see paragraph 33 on page 4). Lof teaches the concept that the alignment mark can be embedded (see calibration substrate HW) and still be used for calibrating the machine. The alignment mark is no longer necessarily exposed at the surface (Col. 6, lines 40-41).

Lof fails to teach the specific method of etching and depositing and covering.

Kobayashi teaches the methods of creating a film on a substrate, etching, using a mask, and embedding the film with further material (see Abstract).

It would have been obvious for one of ordinary skill in the art to use the method of Kobayashi in creating the substrate and alignment mark of Lof since it is a well known method of creating an embedded material in a substrate as shown by Kobayashi.

### ***Response to Arguments***

10. Applicant's arguments in the previous appeal brief and supplemental appeal brief with respect to claims 1-20 have been considered and in light of recent analysis of the rejection and the references, it has been determined that the prosecution is to be reopened and the withdrawal of the finality. The new rejection above wherein the Lof reference is used as a 102(e) reference rather than as a secondary reference in the rejections. Lof clearly teaches alignment marks that are embedded between layers and the new reference of Kobayashi teaches a method of embedding a material within a substrate which can be used for creation of alignment marks such as those taught by Lof.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571)272-1134. The examiner can normally be reached on Monday-Fridays from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on (571) 272-1316. The fax phone



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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yogendra N Gupta/  
Supervisory Patent Examiner, Art Unit 1791

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